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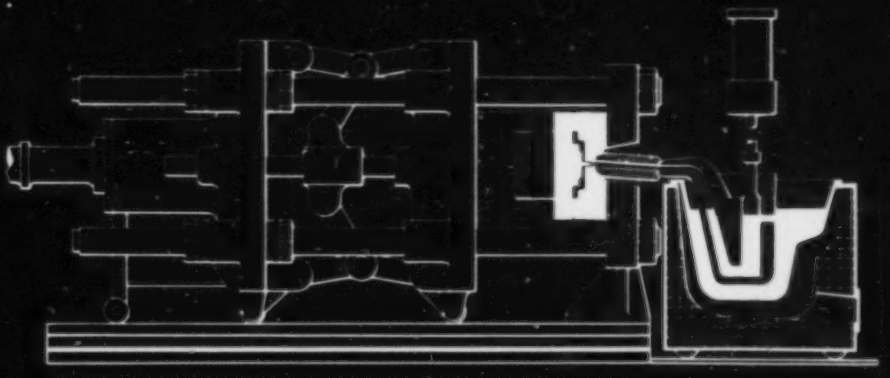
U.S. MARKETS FOR ZINC DIE CASTING 1977-81



U.S. Zinc Die Casting Tonnage

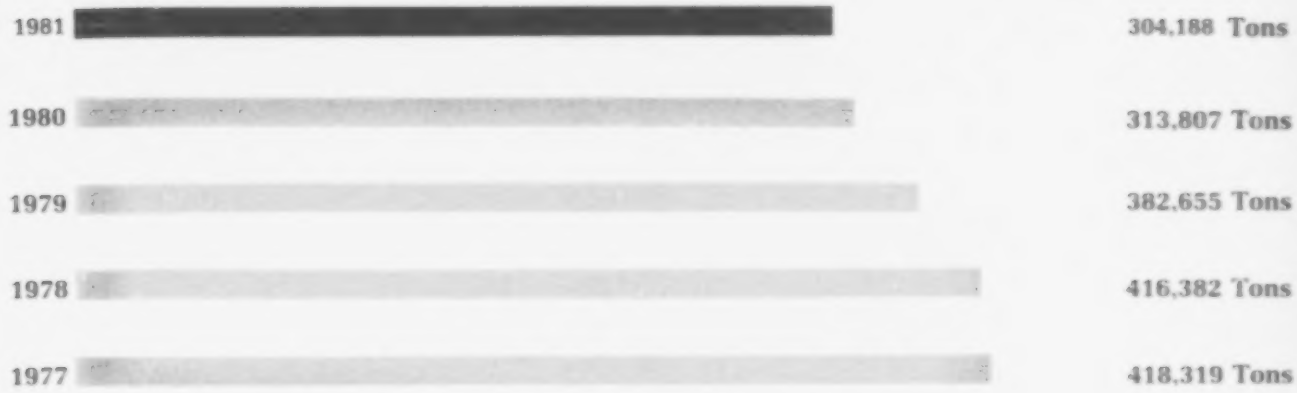


Table 1
Market-by-Market Analysis (Tonnage)

Automotive Components	1981	98,712 Tons	32.5%
	1980	103,593 Tons	33.0%
	1979	165,761 Tons	43.3%
	1978	192,492 Tons	46.2%
	1977	205,801 Tons	49.3%
Builders Hardware	1981	79,710 Tons	26.2%
	1980	83,767 Tons	26.7%
	1979	84,543 Tons	22.1%
	1978	93,078 Tons	22.4%
	1977	93,539 Tons	22.4%
Electrical Components	1981	38,427 Tons	12.6%
	1980	41,666 Tons	13.3%
	1979	42,986 Tons	11.2%
	1978	43,384 Tons	10.4%
	1977	38,956 Tons	9.3%

Domestic Appliances	1981	26,897 Tons	8.8%
	1980	25,128 Tons	8.0%
	1979	27,051 Tons	7.1%
	1978	29,690 Tons	7.1%
	1977	22,694 Tons	5.4%
Industrial, Agricultural and Commercial Machinery	1981	25,719 Tons	8.5%
	1980	28,014 Tons	8.9%
	1979	29,763 Tons	7.8%
	1978	26,230 Tons	6.3%
	1977	24,685 Tons	5.9%
Miscellaneous Industries (Scale 2:1)	1981	15,465 Tons	5.1%
	1980	12,808 Tons	4.1%
	1979	11,983 Tons	3.1%
	1978	11,009 Tons	2.6%
	1977	10,160 Tons	2.4%
Sporting Goods and Toys (Scale 2:1)	1981	8,663 Tons	2.9%
	1980	10,220 Tons	3.2%
	1979	10,037 Tons	2.6%
	1978	9,519 Tons	2.3%
	1977	10,564 Tons	2.5%
Scientific and Professional Equipment (Scale 2:1)	1981	7,556 Tons	2.4%
	1980	4,642 Tons	1.5%
	1979	6,201 Tons	1.6%
	1978	6,151 Tons	1.5%
	1977	5,901 Tons	1.4%
Sound and Television Equipment (Scale 2:1)	1981	3,038 Tons	1.0%
	1980	3,969 Tons	1.3%
	1979	4,331 Tons	1.2%
	1978	4,829 Tons	1.2%
	1977	6,019 Tons	1.4%

U.S. Zinc Die Casters

Table 2
Market-by-Market Analysis (Die Casters)

Automotive Components	1981	198 Die Casters	46%
	1980	206 Die Casters	47%
	1979	200 Die Casters	45%
	1978	209 Die Casters	46%
	1977	203 Die Casters	44%
Builders Hardware	1981	233 Die Casters	54%
	1980	243 Die Casters	55%
	1979	253 Die Casters	57%
	1978	247 Die Casters	54%
	1977	250 Die Casters	54%
Electrical Components	1981	164 Die Casters	38%
	1980	186 Die Casters	42%
	1979	193 Die Casters	43%
	1978	188 Die Casters	41%
	1977	186 Die Casters	40%

Domestic Appliances	1981		140 Die Casters	33%
	1980		144 Die Casters	33%
	1979		156 Die Casters	35%
	1978		152 Die Casters	33%
	1977		145 Die Casters	32%
Industrial, Agricultural and Commercial Machinery	1981		181 Die Casters	42%
	1980		192 Die Casters	43%
	1979		195 Die Casters	44%
	1978		193 Die Casters	42%
	1977		190 Die Casters	41%
Miscellaneous Industries	1981		118 Die Casters	28%
	1980		116 Die Casters	26%
	1979		114 Die Casters	26%
	1978		122 Die Casters	27%
	1977		113 Die Casters	25%
Sporting Goods and Toys	1981		86 Die Casters	20%
	1980		93 Die Casters	21%
	1979		90 Die Casters	20%
	1978		91 Die Casters	20%
	1977		98 Die Casters	21%
Scientific and Professional Equipment	1981		98 Die Casters	23%
	1980		102 Die Casters	23%
	1979		103 Die Casters	23%
	1978		113 Die Casters	25%
	1977		110 Die Casters	24%
Sound and Television Equipment	1981		65 Die Casters	15%
	1980		76 Die Casters	17%
	1979		76 Die Casters	17%
	1978		84 Die Casters	18%
	1977		88 Die Casters	19%

U.S. Markets for Zinc Die Casting 1977-81

In this study Zinc Institute (ZI) publishes its eighth annual report on end uses of zinc die castings, analyzing the market breakdown for 1981. The figures used, as always, are not ZI's—they are provided by zinc die casters who voluntarily make this study possible.

The market breakdowns used herein are identical with those used in England and Canada, which permits comparative analysis of market strength and trends on a specific market by market basis.

During 1981 Zinc Institute learned of four new zinc die casting locations, as well as 19 that are no longer active. The number of total die casters has been adjusted accordingly to 428.

Of these companies, 427 either answered the Zinc Institute questionnaire or responded to personal or telephone follow-up. Tonnages for the one plant that did not release figures were estimated based on known production capacities. Their total tonnage amounts to less than .5% of the total.

No distinction is made in the ZI report between custom and captive die casting since this definition depends on shop and machine time available in any given period.

It is hoped that this report will continue annually to provide a better statistical marketing guide for zinc die casters and their major suppliers.

For this report, the 304,188 tons of zinc die castings shipped by casters in 1981 compares to the 267,167 tons reported as zinc base alloy use of slab zinc in the preliminary Bureau of Mines report for 1981. It has been felt that tonnage from non-reporting zinc alloy producers and users would add to the total reported to the Bureau of Mines as consumed.

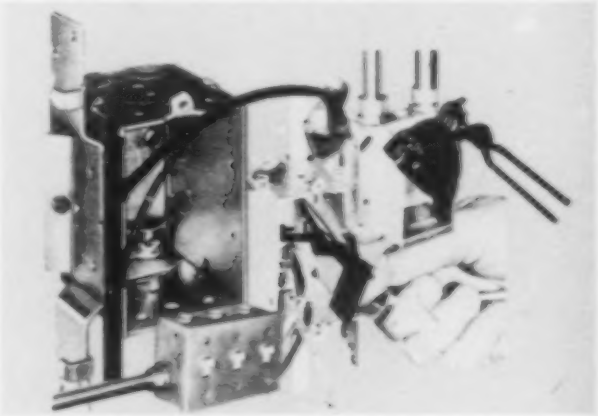
Zinc die casting's traditional number one die casting market, automotive, is still dominant. At 98,712 tons, it represents 32.5% of the total 304,188 tons. Builders hardware retained second place, 79,710 tons, 26.2% of the market in 1981. Electrical components remained in third place with 38,427 tons or 12.6% of the market. Domestic appliances moved up to fourth place with 26,897 tons, or 8.8% of the market.

Complete figures in Tables 1 and 2 show zinc die casting tonnages and percentages, as well as the number and percentages of die casters in each of the nine major markets.

Automotive Components

Builders Hardware

Electrical Components



1981	98,712 Tons	32.5%
1980	103,593 Tons	33.0%
1979	165,761 Tons	43.3%
1978	192,492 Tons	46.2%
1977	205,801 Tons	49.3%

(Scale 1:2)

Zinc die castings manufactured for the automotive market at 98,712 tons were 32.5% of total 1981 sales. This reflects significantly the drive of automotive producers to lighten cars. In addition, ThinWall zinc continues to be an important factor with the introduction of 1982 models in the fall of 1981. This saved zinc applications, but also reduced tonnage. Die casters in this market were 198 in number, 46% of the total.

The market consists of handles and locks, mechanical components, electrical components, body hardware and trim, lamp and lighting fittings, instruments and other automotive components. Pounds of zinc die castings per average car, again reflecting the need for lighter weight, and ThinWall zinc, dropped from nearly 45 pounds per car in 1976 to 39.5 in 1977, 30 in 1978, 28 in 1979, 25 in the 1980 models, 24.2 in the 1981 models, and 22.7 in 1982.

1981	79,710 Tons	26.2%
1980	83,767 Tons	26.7%
1979	84,543 Tons	22.1%
1978	93,078 Tons	22.4%
1977	93,539 Tons	22.4%

(Scale 1:2)

Builders hardware, second largest market for zinc at 79,710 tons, took 26.2% of the market. Die casters involved were 233, 54% of the total.

In spite of the serious condition of the housing industry, this market's decline appears to have slowed, showing a decline of about 4,000 tons from its 1980 level.

The market covers door and window hardware, locks and keys, furniture and cabinet hardware, hand tools and cutlery, bathroom and plumbing fittings, general hardware, marine hardware, and luggage hardware.

1981	38,427 Tons	12.6%
1980	41,666 Tons	13.3%
1979	42,986 Tons	11.2%
1978	43,384 Tons	10.4%
1977	38,956 Tons	8.9%

(Scale 1:2)

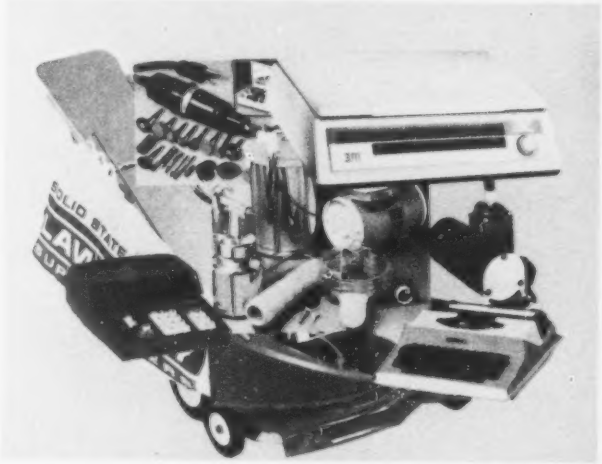
Electrical components reached 38,427 tons for 12.6% of the market and a clear hold on third place among zinc die cast markets, shared by 164 die casters, 38% of the producers.

The market includes conduit fittings, switches, plugs and sockets, telecommunication equipment, switch gear, pole-line hardware, motor components, lighting fixtures and equipment.

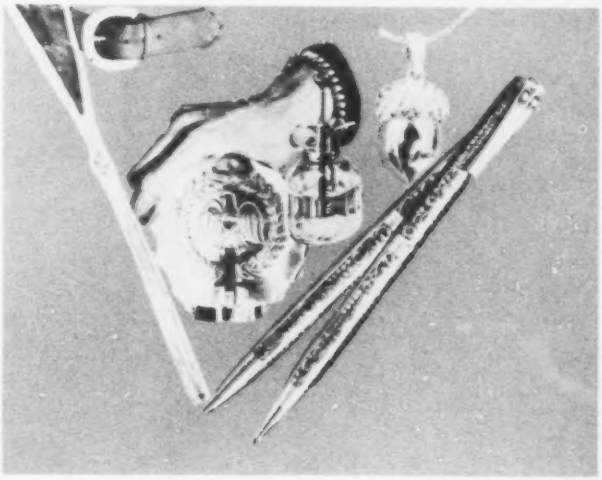
This industrially oriented market, which is more stable than consumer goods, is nevertheless strongly affected by construction, particularly in the residential housing field.

Domestic Appliances

Industrial, Agricultural and Commercial Machinery



Miscellaneous Industries



1981	26,897 Tons	8.8%
1980	25,128 Tons	8.0%
1979	27,051 Tons	7.1%
1978	29,690 Tons	7.1%
1977	22,694 Tons	5.4%

(Scale 1:2)

This market at 26,897 tons, 8.8%, moved up to fourth place in 1981. The number of die casters, 140, or 33%, decreased slightly.

The market includes vacuum cleaners, floor polishers, refrigerators and freezers, ranges, washing machines and dryers, dishwashers, small appliances, heating appliances, room air conditioners, fans and sewing-machine components.

1981	25,719 Tons	8.3%
1980	28,014 Tons	8.9%
1979	29,763 Tons	7.8%
1978	26,230 Tons	6.3%
1977	24,685 Tons	5.9%

(Scale 1:2)

In 1981, the consumer-oriented markets, for the most part, seemed to continue at 1980 levels. In fifth place, industrial, agricultural and commercial machinery accounted for 25,719 tons and 8.5% of the total. 181 die casters, 42%, were in this market.

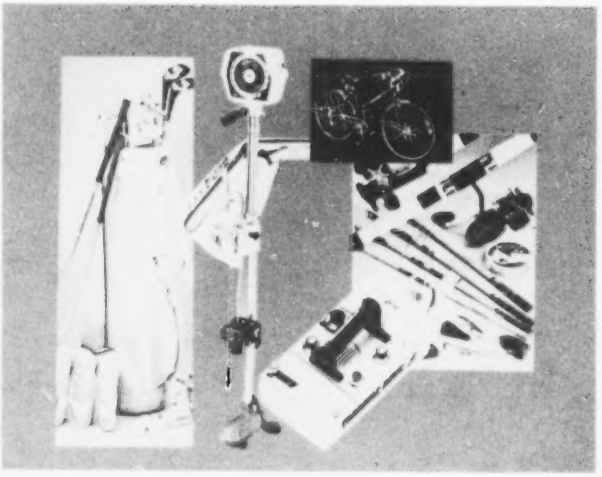
This market includes copying equipment, office equipment, business machines, agricultural and food machinery, vending machines, machine tools, power tools, central heating and air conditioning, power-operated garden equipment, lawn mowers, snow blowers and gasoline service station equipment.

1981	15,465 Tons	5.1%
1980	12,808 Tons	4.1%
1979	11,983 Tons	3.1%
1978	11,009 Tons	2.6%
1977	10,160 Tons	2.4%

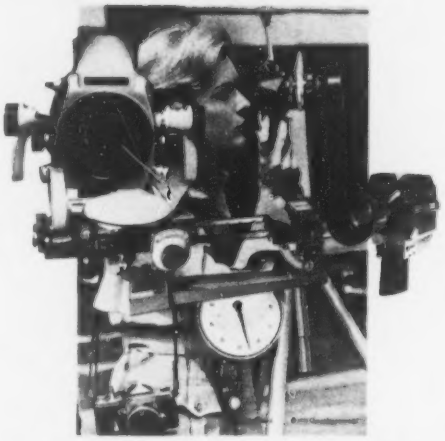
(Scale 2:1)

Markets named by relatively few die casters were arbitrarily grouped here and increased slightly in 1981 to 15,465 tons or 5.1% of the total. A total of 118 die casters, 28% of them, reported in this category which sold to markets such as tableware, jewelry and ornaments, fancy goods and souvenirs, zippers, buttons and buckles. This was zinc's sixth largest market for 1981.

Sporting Goods and Toys



Scientific and Professional Equipment



Sound and Television Equipment

1981	8,663 Tons	2.9%
1980	10,220 Tons	3.2%
1979	10,037 Tons	2.6%
1978	9,519 Tons	2.3%
1977	10,564 Tons	2.5%

(Scale 2:1)

Zinc's die casting production in 1981 decreased to 8,663 tons, or 2.9% of the total market, remaining in seventh place. Eighty-six die casters, or 20%, participated.

The market consists of toys, musical instruments, and sports goods.

1981	7,556 Tons	2.4%
1980	4,642 Tons	1.5%
1979	6,201 Tons	1.6%
1978	6,151 Tons	1.5%
1977	5,901 Tons	1.4%

(Scale 2:1)

At 7,556 tons, or 2.4% in 1981, this market increased almost 3,000 tons from the 4,642 tons recorded in 1980. A total of 98 die casters, 23% of the market, sold to makers of valves, scientific instruments, timing devices, cameras and projectors and optical instruments. This was zinc's eighth largest market for 1981.

1981	3,038 Tons	1.2%
1980	3,969 Tons	1.3%
1979	4,331 Tons	1.2%
1978	4,829 Tons	1.2%
1977	6,019 Tons	1.4%

(Scale 2:1)

With 3,038 tons and 1.2% of the market, these consumer-oriented products dropped in 1981. Sixty-five die casters, 15% were involved in this market area. It consists of assemblies and parts for radio, television, record and tape players. This was zinc's ninth largest market for 1981.

This continuing decline can probably be attributed to increased foreign imports.

While every effort has been made to assure that the information given in this booklet is technically correct, Zinc Institute Inc. does not warrant its accuracy.

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